

mode of decomposition are applicable here as were made in relation to the chlorides when in solution (501).

505. *Hydro-fluoric acid and fluorides*.—Solution of hydro-fluoric acid did not appear to be decomposed under the influence of the electric current: it was the water which gave way apparently. The fused fluorides were electrolysed (153); but having during these actions obtained *fluorine* in the separate state, I think it better to refer to a future series of these Researches, in which I purpose giving a fuller account of the results than would be consistent with propriety here.¹

506. *Hydro-cyanic acid* in solution conducts very badly. The definite proportion of hydrogen (equal to that from water) was set free at the *cathode*, whilst at the *anode* a small quantity of oxygen was evolved and apparently a solution of cyanogen formed. The action altogether corresponded with that on a dilute muriatic or hydriodic acid. When the hydro-cyanic acid was made a better conductor by sulphuric acid, the same results occurred.

Cyanides.—With a solution of the cyanide of potassium, the result was precisely the same as with a chloride or iodide. No oxygen was evolved at the positive electrode, but a brown solution formed there. For the reasons given when speaking of the chlorides (501), and because a fused cyanide of potassium evolves cyanogen at the positive electrode, I incline to believe that the cyanide in solution is *directly* decomposed.

507. *Ferro-cyanic acid* and the *ferro-cyanides*, as also *sulpho-cyanic acid* and the *sulpho-cyanides*, presented results corresponding with those just described (506).

508. *Acetic acid*.—Glacial acetic acid, when fused (141), is not decomposed by, nor does it conduct, electricity. On adding a little water to it, still there were no signs of action; on adding more water, it acted slowly and about as pure water would do. Dilute sulphuric acid was added to it in order to make it a better conductor; then the definite proportion of hydrogen was evolved at the *cathode*, and a mixture of oxygen in very deficient quantity, with carbonic acid, and a little carbonic oxide, at the *anode*. Hence it appears that acetic acid

¹ I have not obtained fluorine: my expectations,

amounting to
viction, passed away one by one when subjected to con-
rigorous examination;
some very singular results were obtained.—December
1838.
It is a very remarkable thing to see carbon and
nitrogen in this case
determined powerfully towards the positive surface of the
voltaic battery;
but it is perfectly in harmony with the theory of electro-
chemical decom-
position which I have advanced.